	NL	HF-Control	HF + EPL
Titin (du)	170 ± 6	117 ± 5*	141 ± 7**
Tubulin-alpha (du)	53 ± 2	77 ± 1*	42 ± 7**
Tubulin-beta (du)	37 ± 4	80 ± 3*	54 ± 4**

*=p<0.05 vs. NL; **=p<0.05 vs. HF-Control

Noon

1116-14 **Three-Dimensional Analysis of Cardiac Magnetic Resonance Imaging the Using Spherical Harmonics Model**

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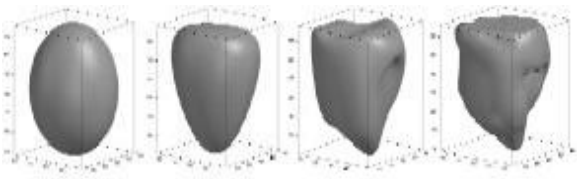
Background: Dilated left ventricular (LV) systolic dysfunction exhibits shape changes of the LV. There is progressive remodeling, and that remodeling follows different patterns. Therefore we investigated the role of computer modeling of the 3-D shape changes observed by cardiovascular magnetic resonance (CMR).
Method: CMR scans were performed in 47 subjects; 5 subjects had normal chamber dimensions and systolic function (EF>55%) and 42 subjects had dilated cardiomyopathy. MR imaging was performed on a 1.5T scanner (GE Excite). We developed an integrated framework for the global measurement and analysis of 3-D motion of the heart with the potential extension to disease classification based on heart behaviors. We adapted spherical harmonics (SPHARM) expansion techniques to create the shape descriptions for each closed 3-D heart surface.
Result: SPHARM shape modeling for functional analysis reliably distinguished normal hearts from dilated cardiomyopathy. Standard parameters of RV and LV functions SV, EF, LVM and WT were computed on the model vs. original data with error<3%. Based on the shape model, we created a user-friendly interactive program to manipulate 3-D representations of SPHARM. The animation components generate the 3-D motions, and aid visual inspection of various dynamic behaviors.
Conclusion: SPHARM shape modeling techniques offer new insights in cardiac functional analysis for studying remodeling due to dilated cardiomyopathy.
Fig.1: Coefficients up to degrees 1, 2, 5, and 16.



Noon

1116-15 **Using the Maturing Veterans Affairs Multimedia Electronic Patient Record to Achieve Measurable Improvements in Patient Care**

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Background: Using the VA multimedia electronic patient record (EPR) has significantly improved patient care at the Washington DC VA Medical Center. Using the EPR, a cardiologist can review and manage the entire patient record using a GUI based patient chart, with all diagnostic images, including ECGs, and cine loops. The EPR improves patient care by a eliminating paperwork and streamlining non-clinical tasks that reduce efficiency. **Methods:** All aspects of the clinical record are distributed through a fiber optic backbone, then by 10/100 Mbyte distribution system to each of over 1500 workstations. DICOM images and screen captures are sent to a 2.5 Terabyte server and archived to a 9 Terabyte Jukebox. ECGs are read directly from the MUSE ECG server using a custom interface. Cardiology images include echoes, coronary arteriograms, ventriculograms, MUGA, thallium studies, X-rays, and ECG tracings, as well as other multispecialty images. The Cardiology database includes records of over 7,818 Caths; 7,770 Holters; 87,079 ECGs; 24,496 Echocardiograms; 11,985 ETTs; and 2,082 EPs. **Results:** All reports, notes, orders, and discharge summaries are written directly into the patient record. The hospital is >98% paperless and filmless. Since the database is complete, it can be mined to provide reminders and schedule procedures by diagnoses, problem list or directives. Despite national trends, patients with hypertension, hypercholesterolemia, diabetes, and CHF have shown progressive improvement with this system. The hypertensive patient population has shown a 63% improvement in patients returning to normal (p > 0.0001). LDL > 120 post MI has shown a 21% improvement. Similar improvements are being made in the other cardiological disease.**Conclusions:** Clinicians have a tool that provides patient information, enhances their productivity by eliminating paperwork, reduces the time spent in non-patient endeavors, and by creating and scheduling reminders and procedures - improves patient care.

Noon

1116-16 **Electronic Clinical Reminders Effectively Identify Patients Not Meeting Guidelines**

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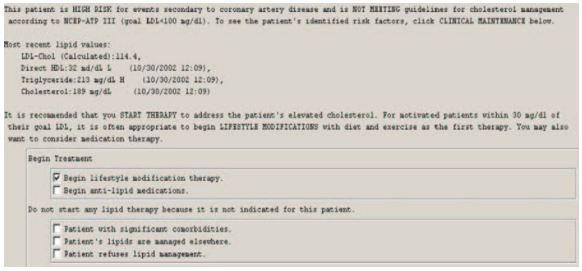
Background: There has been significant interest in the use of computerized medical systems to improve quality of care. The Veterans Administration (VA) Healthcare System has developed a comprehensive electronic medical record, and the Computerized Patient Record System (CPRS) has a tool called Clinical Reminders to assist physician performance. However, these reminders have not been fully developed into decision support tools. **Methods**: National NCEP-ATP III Cholesterol Guidelines and JNC-7 Hypertension guidelines were used as the basis for the creation of a clinical algorithm for comprehensive lipid and hypertension management at the Atlanta VA. Multiple clinical reminders were created so that high, intermediate, and low-risk patients could be described. Reminders identified individuals not meeting published guidelines. **Results**: Only 51.1% (n=8534) of all high-risk patients seen since 1997 met national cholesterol guidelines, and only 35.0% (n=6796) of all patients with visits since January 2003 had normal blood pressure per JNC-7 guidelines. 18.2% (n=3531) of patients had "prehypertension." 18.9% (n=3664) had Stage I hypertension, and 28.0% (n=5431) suffered Stage II hypertension. Clinical reminders effectively identified these patients and provided guidance to physicians to institute medical therapy. **Conclusion**: Computer-based reminders in the VA CPRS system can effectively identify patients not meeting national guidelines and can make specific recommendations to change therapy.



Noon

1116-17 **The Combined Impact of Metabolic Syndrome and Physical Inactivity on Subclinical Atherosclerosis in the Asymptomatic Population**

Milind Y. Desai, Khurram Nasir, John A. Rumberger, Joel B. Braunstein, Matthew J. Budoff, Wendy S. Post, Roger S. Blumenthal, Johns Hopkins University, Baltimore, MD

Background: Lack of sufficient physical activity (PA), metabolic syndrome (MS) and subclinical atherosclerosis (SA) increase risk of developing CHD. The combined effect of MS and lack of PA on SA is not well defined. We determined whether combination of MS and lack of PA increases prevalence of SA in asymptomatic individuals. **Methods:** After excluding diabetics (n = 413), we studied 6142 individuals (67 % males, mean age 52 ± 9 years) referred for electron beam tomography. MS was defined as hypertension (blood pressure > 130/85 mm Hg), hypertriglyceridemia > 150 mg/dl, HDL < 40 mg/dl, and body mass index > 30 kg/m^2 (subjects meeting ≥ 2 criteria were included). PA was defined as self-reported exercise regimen of any duration. Patients were divided into 4 groups: 1 (n = 302) = (+)MS/(-) PA, 2 (n = 471) = (+)MS/(+)PA, 3 (n = 1068) = (-)MS/(-)PA and 4 (n = 3521) = (-)MS/(+)PA. Abnormal coronary artery calcification (ACAC) or significant SA was defined as calcium score > 75th percentile based on gender and age. **Results:** ACAC was present in 30 % patients in Group 1, 25 %patients in Group 2 and 22 % patients in Group 3 and 16 % patients in Group 4 with an abnormal CAC (figure). Group 1 patients had 53 % greater prevalence of ACAC than group 4 subjects (p< 0.001). These results applied to both genders. **Conclusion:** In an asymptomatic population, combination of MS and lack of PA is associated with an incremental increase in prevalence of SA. PA in subjects with MS is associated with lower prevalence of SA, similar to levels observed in non-MS subjects.